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Middle Triassic conodont assemblages from the Germanic Basin: implications for multi-element taxonomy and biogeography

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Abstract

© The Trustees of the Natural History Museum, London 2018. All rights reserved. Conodonts have been a key tool for biostratigraphical, evolutionary and palaeobiogeographical studies, and the Germanic Basin has been one of the most important regions for these studies. However, few modern studies provide systematic data on the mainly endemic conodonts of the Middle Triassic Germanic Basin. Here we document conodonts from two sections in Germany, one Bithynian in age and the other late Anisian to early Ladinian in age. The two sections captured two episodes of marine fauna invasion in the Germanic epicontinental basin during the Middle Triassic. The conodont Neogondolella mombergensis, elsewhere reported as appearing globally, is reviewed and revised, confirming previous suggestions that this species only occurs in the Germanic Basin. Apparatuses of Neogondolella haslachensis and Nicoraella germanica from the Germanic Basin are proposed. It was generally expected that S and M elements within clades have a very high morphological stability compared to P elements. However, the apparatus of Nicoraella germanica differs significantly from that of south China, indicating that the morphology of S elements within a genus can be unstable, and thus promotes our understanding of conodont evolution. The rarely documented genus Gondolatus, which was suggested as representing pathological specimens, is confirmed as a valid genus in the Germanic Basin. Our data suggest that endemic conodonts evolved twice, not only in the Upper Muschelkalk Subgroup, but also in the Lower Muschelkalk Subgroup.

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Keywords

conodonts, Germanic Basin, Middle Triassic, multi-element apparatus, palaeobiogeography